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**First Grade Lesson Plan: The Moon**

**Overview**

This series of lessons was designed to meet the

needs of gifted children for extension beyond the

standard curriculum with the greatest ease of

use for the educator. The lessons may be given

to the students for individual self-guided work, or

they may be taught in a classroom or a

homeschool setting. Assessment strategies and

rubrics are included at the end of the unit. The

lessons were developed by Lisa Van Gemert,

M.Ed.T., the Mensa Foundation’s Gifted Children

Specialist.

**Introduction**

The moon incites children’s curiosity from a very young age. Although it’s a space object,

it’s more accessible to children because of its dependability and proximity. Through this

short unit, children will develop a deeper understanding of the moon.

**Learning Objectives**

After completing the lessons in this unit, students will be able to:

 Discuss basic facts about the moon

 Recognize moon phases in pictures and when viewing the moon

 Understand the origin of moon craters

 Create a model of a cratered moon

**Preparation**

 Print out all sheets that need to be colored or completed on paper

 Make sure you have reliable Internet access

 Gather materials for activities

 Obtain books

Moon-Introduction

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**Lesson 1. Introduce the Moon**

o Read at least three books about the moon. You may

choose from the recommendations below or select

your own.

o *Papa, Please Get the Moon for Me* by

Eric Carle

o *The Nightgown of the Sullen Moon* by

NancyWillard

o *So That’s How the Moon Changes Shape* by

Allan Fowler

o *The Moon Book* by Gail Gibbons

o *Goodnight Moon* by Margaret Wise Brown

o *All about the Moon* by David A. Adler

o Have the child order the books within the following categories by laying them out on

the floor or on a table in order:

o From favorite to least favorite

o From hardest to easiest

o From most to least realistic

o Have the child write or dictate a short book review of his/her favorite book. The

review should include the following:

o The best thing about the book

o Who he/she would recommend the book to (boy/girl, grade/age)

o Reasons for recommendation (illustrations/story/funny/sad)

o Ask the child the following questions:

o Would you like to go to the moon? Why or why not?

o If you went to the moon, who would you take with you?

o What do you think it would be like if we had two moons? How could we tell

them apart?

o Read the following facts about the moon and its phases.

The facts are grouped in lists of five facts. Within each

group, have the child rank the facts from 1 to 5 in order of

most to least important to know, with 1 being most

important and 5 being the least.

o After the facts are ranked, have the child put a star next

to the facts he or she knew before reading the list.

Moon-1.1

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**Fact Rank**

The moon has many names; for instance, the Romans called it Luna.

The moon does not make its own light. It can only reflect light.We see the light

reflected off of the moon from the sun.

The moon has no atmosphere, so it doesn’t have weather. There is no wind on

the moon. Because of this, the footprints on the moon left by the astronauts will

stay for millions of years.

The moon is about 4.5 billion years old.

The moon is orbiting around the earth at the speed of 2, 288 miles (3,683

kilometers) per hour.

**Fact Rank**

The surface of the moon isn’t flat. It has lots of craters. They were formed by

meteorites hitting the moon.

The moon also has mountains and valleys.

The moon moves across our sky toward the east.

The moon is 250,000 miles from earth.

The moon takes 27 days, 7 hours, 43 minutes and 11.6 seconds to orbit the earth.

**Fact Rank**

The part of the moon we can see changes. We call these changes the phases of

the moon.

The phases of the moon are caused by its orbit around the earth.

The first phase of the moon is called the new moon. That is when you cannot see

the moon from earth at all.

If you have thirteen full moons in a tropical year (winter solstice to winter solstice,

the extra one is called a blue moon.

It takes the moon about 29 ½ days to go through all its phases. We call this a

lunar month.

Moon-1.2

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**Lesson 2. Introduce Moon Craters**

o Explain that moon craters are different sizes. They are usually shaped like circles

with the middle sunken in and the edges high.

o Ask why the child thinks the moon would be hit by more meteors than the earth.

(The moon has no atmosphere to protect it, while the earth does.)

o Show pictures of craters of the moon so the child develops a feel for how many

there are. You can also explore the moon at http://earth.google.com/moon/.

o **Moon Crater Art Project**

o Materials: watercolor paint, white cardstock or construction paper,

paintbrush, white glue

o Cut the cardstock or construction paper into a circle as large as the paper will

allow. (You may use the circle pattern at the end of the lesson.)

o Have the child draw craters within the circle with pencil.

o Use the glue to “draw” over the lines.

o When the glue is dry (or at least mostly dry), use watercolor paint to paint the

moon. Using blues, greens, and purples will imitate the idea of the blue

moon.

Moon-2.1

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Moon-2.2

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**Lesson 3. Introduce Moon Phases**

o Watch these two short videos on the phases of the moon:

o http://www.youtube.com/watch?v=mZNfZJZs3R8&feature=related

o http://www.youtube.com/watch?v=2aFGNGEcDOk&feature=related

o Match the name description of the moon phase to the

picture. (See sheet below.) Only four of the eight phases are

on the chart. If the child is interested in all eight phases,

have him or her describe the other phases and draw pictures

of them. *Hint:* in the northern hemisphere, the waxing moon

is on our right side, so the picture at right is of a waning

moon and the picture below is of a waxing moon.

o Go to the following Web site and have the child find the phase of the moon when

he/she was born: http://tycho.usno.navy.mil/vphase.html

o **Chart the Moon Phases**

o Use the printable moon phases calendar at the end of this lesson section.

o Every night for a month, have the child shade in what part of the moon he/she

can see.

o After the month, see how many of the phases of the moon the child can identify.

o Have the child play the matching game on the next page.

Moon-3.1

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The pictures don’t match themoon phase! Help the moon find its phase by drawing a line

from the description to the correct picture of the moon phase.

New Moon: The moon is all dark

because the lit-up half is facing away

from earth

Quarter Moon: A week after the New

Moon, we can see half of the half that

shows, so ¼ of themoon

Full Moon: Two weeks after the New

Moon, we can see the entire lit-up half of

the moon.

Last Quarter (or Third Quarter) Moon:

Three weeks after the New Moon, we

can see half of the lit-up part again. It’s

the other half than we saw before.

**.**Moon-3.2

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**Moon Phases Calendar**

**Month: Year:**

**Sunday Monday Tuesday Wednesday Thursday Friday Saturday**

**.**Moon-3.3

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**Extension**

Additional Resources:

Lots of moon data, including phases, rise and set times, and more:

http://www.usno.navy.mil/USNO/astronomical-applications

Pictures of the moon:

http://www.salzgeber.at/astro/moon/thumb.html#eclipse

http://www.alanbeangallery.com/

Lunar Madness homepage:

http://www.icstars.com/HTML/icstars/graphics/moonlinks/moon1.htm

“Everything you ever wanted to know about the moon”:

http://www.tsgc.utexas.edu/everything/moon/links.html

The Moon Society homepage:

http://www.moonsociety.org/

More books about the moon:

*Moontellers: Myths of the Moon from around the World* by Lynn Moroney

*Moon Landing: the Race for the Moon* by Carole Stott

Activity:

Make Moon Sand:

6 cups of play sand (from home and garden store)

3 cups corn starch

1 ½ cups cold water

Thoroughly mix water and cornstarch until smooth (several minutes).

Gradually mix in sand with hands, one cup at a time.

Store in an airtight container.

To freshen, add 2 – 3 tablespoons of water.

Moon-Extension

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**Assessment**

**Section Far Exceeds**

**Expectations**

**Exceeds**

**Expectations**

**Meets**

**Expectations Progressing**

**Introduction**

Ordering of books:

used strong

reasoning skills

Book review:

covered three main

points required in

clear and creative

manner

Reflection questions:

answers

demonstrated full

understanding of

reading material

Fact ranking: used

reasonable logic

**Moon Craters**

Art project: used

materials to

effectively convey

knowledge of moon

craters

**Moon Phases**

Phase matching:

correctly matched

description to picture

Phase tracking:

accurately tracked

moon phases for

one month

Phase identification:

Correctly identified

phases tracked

Moon-Assessment

1

1

**MULTI-LEVEL**

**LESSON PLAN GUIDE**

**Earth, Moon, and Beyond**

Jeni Gonzales

e-mail: JeniLG7@aol.com

SED 5600

Dr. Michael Peterson

December 18, 2001

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**Unit Plan: Multi-level- Earth, Moon, and Beyond**

**Theme**: Our Solar System is an immense and interactive system that is constantly

changing.

**Essential Questions:**

1. How do objects in our Solar System move?

2. How is life on Earth affected by the movement of objects in the solar

system?

3. Why are the Earth and the Moon considered a system?

4. How do lunar and solar eclipses take place, and why are they not more

common?

**Content Areas Addressed:**

Science- Earth and Space

Social Studies- calendar

Art- creating models

Sketching phases of the moon

Literature- writing journal entries

Reading stories and poems about the moon

Writing stories and poems about the moon

Music- Listening to music about the moon

Writing music about the moon

Math- calculations and spatial orientation

**MULTI-LEVEL LEARNING GOALS FOR THE UNIT**

**Overall theme and**

**goal**

**Level 1 (Highest) Level 2 Level 3 (Lowest)**

The Solar System is immense. Know time Ðspace relation of

Earth-MoonÕs position in Solar

System

Know Earth-MoonÕs position

in Solar System

Know Earth is only small part

of Solar System

The Solar System is

interactive.

Know why Earth revolves

around Sun, and why Moon

revolves around earth. Also

why we have seasons and why

phases of moon and solar and

lunar eclipses occur. Know

the phases of the moon. Also

how the moon affects tides on

Earth.

Know why Earth revolves

around Sun, and moon

revolves around Earth. Know

about the seasons. Know why

the phases of the moon occur

and solar and lunar eclipses.

Also how the moon affects

tides on Earth.

Know that earth revolves

around the Sun and Moon

revolves around earth. Be able

to name the seasons and tell

what weather is like where

they live during those seasons.

Know that the moon is always

a round sphere but that we

only see the parts of it that the

Sun is reflecting off of.

The Solar System is constantly

changing.

Know that the Earth-Moon

System is always moving

around the Sun, just like the

other planets and their moons

are always moving around the

Sun.

Know that the Earth-Moon

System is always moving

around the Sun, just like the

other planets are always

moving around the Sun.

Know that the Earth is always

moving around the Sun, and

that the moon is always

moving around the Earth.

3

3

**LEARNING ACTIVITIES**

**ACTIVITIES MULTI-LEVEL**

**STRATEGIES**

**Ling Math Spatial Body-Kin Music Inter-personal Intra-personal**

Earth/Moon

System

Advanced students

observe and record,

less advanced act

as moon, sun, and

earth

Naming

Earth,

Moon and

Sun/

additional

vocab

Number of

hours in Earth

Day/ days in

Earth year

Distance

of Sun

and Moon

Hands on:

Students

act as sun,

earth,

moon

Work in groups Reflect in ÒSpace

JournalsÓ

EarthÕs Axis Advanced draw

International Date

Line/less advanced

label top as ÒNÓ

and bottom as ÒSÓ

Naming

parts of

globe

Intro to time

zones,

circumphrence

can be

discusses

Learning

about

EarthÕs

rotation

on its

imaginary

axis

Hands on:

Creating

own globes

Older students

can help younger

and vice versa

Reflect in Space

Journals

Day & Night/

Time Zones

Advanced

demonstrate time

zones

Learning

terms

rotation,

and time

zone

Determining

what time it is

in different

time zones

EarthÕs

position

relative to

the Sun in

its

rotation

Students

can

participate,

rotating the

Earth

model or

globe

Work in groups

determining time

zones

Reflect in Space

Journals

Seasons Advanced

determine when the

Winter and Spring

equinoxes are and

why those dates are

chosen

Naming

each of the

seasons

How many

days left until

winter or

spring?

EarthÕs

position

relative to

the sun in

its

revolution

Students

can

participate

in creating

seasons

Play a

song

about

each

season

Reflect in Space

Journals

Phases of Moon

Model/Eclipses

Advanced figure

out when the next

solar and lunar

eclipse will be in

US

Naming

each phase

of the

moon,

eclipse

vocab

How many

days does a

complete

cycle of the

moon take

Moons

position

relative to

Earth and

Sun

Students

can

participate

in creating

phases of

the moon

Play

music

written

using

the

word

moon,

ÒFly

Me to

the

MoonÓ

Reflect in Space

Journals

Phases of Moon

journal

Less advanced just

draw pictures of the

phases

Reinforcing

phases of

the moon

Number of

days in moon

cycle

Moons

position

in the sky

Hands on:

Students

are

sketching

their view

of moon

Have students

share journal

entries

Reflect in

Journal/ add

moon sketches

into journal

Reading/

writing

literature about

Moon

Different levels of

books available/

different levels of

writing

Learning

terms in the

books

Play

Mozart

quietly

Have students

share what they

read

Reflect in Space

Journal

Planetarium

field trip

Students will all get

something different

out of the

experience

Learning

term

planetarium

How long will

it take to get

there?

Stars in

the ÒskyÓ

Usually

some

music

is

played

Buddy groups of

older and

younger students

Reflect in Space

Journal

4

4

**ACTIVITY: EARTH-MOON SYSTEM**

Bring in beach balls for the Sun, baseballs for the Earth, and ping pong balls for the

Moon. Have students in groups of four. Make sure the groups consist of different levels

of students. Have on student in each group act as the Sun and hold the beach ball above

their heads. Then have another student in each group act as the Earth and hold the

baseball above their heads. They are to stand a little bit of a distance from the Sun, and

they are to SLOWLY turn as they **revolve** around the Sun. Have another student from

each group act as the Moon and hold the ping pong ball above their heads. They should

stand close to the Earth and only make one **rotation** as they **revolve** around the Earth.

This means that they should always face the earth, since only one side of the moon ever

faces the Earth. Have another student from each group observe and record what they see.

After the activity is completed, have the students reflect on the activity, what they have

learned, what they are curious to learn more about, and/or any creative thoughts this

activity may have inspired them to write. This is their journal, so it is the studentÕs

choice what he/she wishes to write. They can do this in a ÒSpace JournalÓ that will be

written in at the end of every activity.

**Multi-level Strategies:**

Advanced students can observe and record, or act as the moon, explaining to the

members of their group that only one side of the moon ever faces the Earth. The less

advanced students can act as the Sun or the Earth.

The journal entries can vary from an entire page or more, to just half a page, to just a

sentence with a picture. Or students who are younger, or lower functioning can just draw

a picture of the activity and maybe write a few words to go along with the picture.

**Linguistics:**

Naming the Earth, Moon and Sun. Also saying the vocabulary that goes with those three

objects: Earth-Moon System

Path

Motion

Ellipse

Be able to describe difference between circular path and an elliptical path

Revolution

Rotation

Be able to describe the difference between revolving and rotating when

Describing objects in the Solar System

5

5

**Math:**

Students can figure out the number of hours in an Earth Day compared to a Moon Day.

A Moon Day is 27.3 days long, and a Moon Year is 27.3 days long. How is this

possible? Students can learn that the same side of the Moon always faces the Earth from

this. If there are 24 hours in an Earth Day, and 365 days in an Earth Year, how many

hours are in an Earth Year?

**Spatial:**

Students can get a glimpse of how big our Solar System is by researching the distances

between the Sun and the Earth, and the Moon and the Earth. Also, what is the difference

between a circle and an ellipse? They can learn that all of the objects in the Solar System

have elliptical orbits. So the Moon revolves around the Earth in an elliptical path, just as

the Earth revolves around the Sun in an elliptical path.

**Bodily- Kinesthetic:**

Hands on project, where the students are constantly moving, just as the objects in the

Solar System are constantly moving. One student acts as Sun, one as Earth, one as

Moon, and one as an astronomer observing the path the Earth-Moon System takes around

the Sun. The students acting as the Earth and the Moon have to slowly spin while

walking in an oval. The student acting as the Moon has to make sure that they are always

facing the Earth, just like one side of the Moon always faces the Earth.

**Interpersonal:**

They have to work together in groups of four. Three as Sun, Earth and Moon, and one as

the astronomer.

**Intrapersonal:**

After they have finished the activity, each person can reflect on what they have done and

seen, anything they are curious to learn more about, and/or any creative thoughts this

activity inspired them to write.

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**ACTIVITY: EARTHÕS AXIS**

Give each student a small Styrofoam sphere about twice the size of a baseball. Have

them stick a thin, long wooden peg (sticks from the game ÒPick-up SticksÓ can be used)

through the center of the sphere. Have them draw a circle around the top peg and label it

the ÒArctic Circle.Ó The top peg will serve as the North Pole. Have them draw a circle

around the bottom peg and label it the ÒAntarctic Circle.Ó The bottom peg will serve as

the South Pole. Have them draw a circle around the middle of the sphere and label it the

ÒEquator.Ó Explain that the wooden peg is an imaginary axis that the Earth spins around.

Demonstrate this by having them slowly spin their ÒEarthsÓ on their desks. Have them

draw and color the continents and the oceans with oil crayons (or ask the art teacher what

the best supply would be used for this activity). The coloring of the oceans and

continents is optional, as long as they have an idea of where their country is on the globe,

relative to the North and South Poles and the Equator.

**Multi-level Strategies:**

The more advanced students could draw and label the International Date Line on their

globes, and explain to the class what it means and what its purpose is. This will

introduce them to the concept of time zones.

The younger or less advanced students could just label the top peg as ÒNÓ for North Pole,

and the bottom peg as ÒSÓ for South Pole. They should still draw a circle around the

center of the globe so they know where the North part of the globe starts, and the South

part begins.

**Linguistics:**

Naming parts of the globe: Arctic Circle

Antarctic Circle

Antarctica is a continent in the Antarctic Circle

Equator

Axis

North Pole

South Pole

Northern Hemisphere

Southern Hemisphere

**Math:**

Introduction to time zones. Circumphrence of the Earth can be discussed. The Earth is a

sphere.

7

7

**Spatial:**

Learning about EarthÕs imaginary axis. The Earth spins on this axis (rotates); while it

moves in a path around the Sun (revolves around the Sun).

**Bodily- Kinesthetic:**

Hands on project. The students are working with their hands to create their own globes.

This is good for fine motor skill improvement. The option is there for students to work

with another art supply such as oil crayons or something that will stick to the foam sphere

without coming off too easily if the students touch it. They are also spinning the globe by

its axis on their desks. The Earth actually spins quickly, but because of the distance it has

to cover to make a complete rotation it takes 24 hours, which seems very slow to us, so

the students should spin their globe SLOWLY on their desks. This practices control.

**Interpersonal:**

In this activity, some students may have more skill and practice at a hands on activity.

The older students could help the younger students, or vice versa. It should be made

clear that helping a fellow student does not mean completing the task for them. Helping

should mean showing the student being helped the strategy the helper used in completing

their own task. Or in this case, if the younger students are having a difficult time getting

the wooden peg through the center of the sphere, an older student could help them get it

through.

**Intra-personal:**

At the end of this activity, the students should reflect on the activity in their Space

Journals.

8

8

**ACTIVITY: DAY AND NIGHT/TIME ZONES**

A lamp without a shade is needed. This will serve as the Sun. Explain to students that in

the actual Solar System the Sun is much bigger than the Earth. Then use one of the

globes that the students made. Have a student volunteer help (preferably the students

whose globe is being used). With the lights out, and the lamp (with no shade) turned on,

have the student hold the globe level with the lamp and explain the the class that the side

of the globe facing the Sun (lamp) is experiencing daytime. The side of the globe facing

away from the Sun is experiencing nighttime. Have the student slowly turn the globe

counterclockwise. Explain that on Earth it seems as if the Sun rises in the East and sets

in the West. This is because the Earth is rotating counterclockwise. The Sun hits the

eastern states before it hits the western states. Ask the students how that makes a

difference in what time it is here in Michigan, compared to the time in California, on the

western coast of the United States. Since the Earth is turning in such a way that the

sunlight hits us before it hits California, that it must be earlier in California. When we

see the sunrise outside in the eastern sky, the children in California are still sound asleep

because it is still nighttime there. Explain the time zones starting from Michigan and

going west, showing that at each new time zone, an hour is taken away. So if its 12 noon

here in Michigan, it is 9 am in California. When we are eating lunch, the students in

California are just getting to school.

Have the students gather in groups ranging in levels and make sure each group has a

globe (one that distinguishes time zones). Have them figure out what time it is in

different parts of the world at that moment. Also have them find the International Date

Line and discuss in their groups what they think the purpose of it is. Also why do they

think the people who came up with the idea, decided to place it where they did. (In the

Pacific Ocean where it does not interfere with countries.)

After this activity is completed, have the students reflect in their Space Journals.

**Multi-Level Strategies:**

Advanced students can learn the different times zones as well as investigate the

International Date Line, where it lies and what its purpose is.

Less advanced students can benefit from learning why day and night occur. They can

also benefit from learning that in the Earth sky the Sun appears to rise in the east and set

in the west and why this occurs.

**Linguistics:**

Emphasis should be placed on the word **rotation** because day and night occur because of

the earthÕs rotation on its imaginary axis. Other word groups such as time zones and the

International Date Line should be learned. Vocabulary: Rotation

Imaginary axis

9

9

Time zone

International Date Line

Clockwise

Counterclockwise

**Math:**

Determining the different times in different time zones. For example, if it is 12 noon

here, what time is it in Japan?

**Spatial:**

Students are made aware of distances around the Earth that account for differences in

time. Students can see how big each time zone is by looking at a globe. They are also

being asked to figure out why the International Date Line lies where it does on the globe.

They should be made aware that the International Date Line is an imaginary line used on

maps and globes and cannot be seen on the actual Pacific Ocean.

**Bodily- Kinesthetic:**

Students are able to participate in rotating the globe in their groups, learning

counterclockwise versus clockwise.

**Interpersonal:**

Work in groups to determine time zones and to investigate the use of the International

Time Zone. Students are able to work at their own level and to be in the company of

students who are both higher and lower functioning than themselves.

**Intra-personal:**

They are to reflect in their space journals after this activity is completed.

10

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**ACTIVITY: SEASONS**

Have one student holding the beach ball as the Sun. Use another globe made by one of

the students in this activity. Have that student model the seasons. Have the student tilt

the axis (wooden peg) of his/her Earth and tell the student to keep it tilted that way at all

times. Demonstrate that sometimes the top peg (the North Pole) is tilted towards the Sun,

while the bottom peg (the South Pole) is tilted away. This means that the Northern

Hemisphere is experiencing summer while at the same time; the Southern Hemisphere is

experiencing winter. Explain that this is because the Northern Hemisphere is receiving

more direct sunlight because it is tilted toward the Sun. Ask them if anyone has noticed

that the Sun seems to be higher in the sky at noon in the summer than it is in the summer.

(EMPHASIZE THE FACT THAT STUDENTS SHOULD **NEVER** LOOK DIRECTLY

INTO THE SUN!) Ask them why they think that is. Also have the student demonstrate

the globe on the other side of the Sun; Where the Northern Hemisphere is tilted away

from the Sun while the Southern Hemisphere is tilted toward the Sun. Have the student

move the globe a quarter of the way around the Sun so the axis is not tilted toward the

Sun at all and explain spring and fall. Explain that the Earth makes a complete revolution

around the Sun. One revolution takes 1 year and that is why there are four seasons.

Have the students get into groups of multi-levels with one globe per group. Have one

student in each group act as the Sun and another student move the globe around the

ÒSunÓ always tilting the same way. The other students in the group have to say which

season it is in the Northern Hemisphere. While the group activity is taking place, have

instrumental seasonal music playing softly in the background.

At the end of the activity, have the students reflect on the activity in their Space Journals.

**Multi-Level Strategies:**

Advanced students can determine when the spring and winter equinoxes are and why

they fall on the dates they fall on.

The students can learn at a variety of levels in this activity, some only realizing what the

different seasons are and what the weather is like in those seasons, and some

understanding the entire concept of the earths revolution around the sun and how that

affects the EarthÕs seasons along with the tilt of the EarthÕs axis.

**Linguistics:**

Naming each of the seasons: Winter

Spring

Summer

Fall

11

11

Emphasize the word **revolution** because the Earth makes 1 full revolution around the Sun

in 1 year. Also correspond the word revolution with the word **tilt**, because together they

create the seasons on Earth.

**Math:**

Students can figure out how many days left until winter or spring or summer (depending

on what season it is at the time).

**Spatial:**

EarthÕs position to the Sun relative to its tilt and where it is in its revolution around the

Sun.

**Bodily-Kinesthetic:**

Students can participate in creating seasons in their groups. The student holding the

Earth has to keep it tilted the same way as it revolves around the Sun.

**Music:**

During the group activity instrumental seasonal music can be played softly in the

background.

**Interpersonal:**

The students work in groups when creating the seasons with the globes.

**Intra-personal:**

After the activity is completed the students are to reflect in their Space Journals.

12

12

**ACTIVITY: PHASES OF THE MOON MODEL AND ECLIPSES**

The lamp without the lampshade is needed again for this activity. A thin flexible wire is

needed with a ping pong ball firmly attached to one end. Also use another globe created

by one of the students. Take the end of the wire without the ping pong ball and stick it in

the top of the globe. The wire has to be long enough so the ping pong ball (moon)

reaches the equator of the globe. The student who made the globe is to hold the globe

still during this activity. With the lights out and the lamp (with no lampshade) turned on,

that student is to hold the globe level with the lamp (Sun). You can stand next to the

student and move the moon around the Earth. (Make sure that at the beginning of the

activity the moon is moved in a way so that is does not fall in the shadow of the Earth

during the full moon phase.) Show the students that half of the moon is always lit up by

the Sun. However, because of our position on earth, we see different parts of the moon

being lit up, known as phases. Demonstrate the phases of the moon, and then have a

student volunteer come up and manipulate the moon around the Earth. Stop the moon at

each full phase (new moon or full moon) and ask the students which phase the moon is at.

Pass out a sheet of paper to each student with one circle in the middle and 8 circles

surrounding the center circle. Explain the phases of the moon and have them shade in as

much of the moon as can be seen by Earth. Then have them work in groups to finish

their diagram and label each of the phases. Have each person in a group explain to the

rest of their group about a different phase. During this activity, play music written about

the moon or with lyrics about the moon in it. Ex. ÒFly Me To The Moon.Ó

Turn off the lights again and have a different student volunteer participate. Use the globe

the student completed in the previous activity. Have the student hold the globe level with

the lamp (Sun) and position the moon between the Sun and the Earth. Explain that

sometimes the moon casts a shadow on the Earth and this temporarily blocks the Sun and

is called a solar eclipse. Have the student hold the moon so the Earth is directly between

the Sun and the moon. Explain that sometimes the moon moves into the EarthÕs shadow

and blocks the Moon when it is in its Full Moon phase. This is called a lunar eclipse.

After this activity or activities are completed (this can be done as one activity or as two

separate activities), have the students reflect in their Space Journals.

**ACTIVITY: PHASES OF THE MOON JOURNAL**

At home, have the students observe the moon nightly (when it is clear outside) and sketch

the moon as it appears in the sky. Have them write which phase the moon is in and then

any thoughts that the moon inspires them to write. Tell them not to worry about

grammar, and just to write whatever comes to their mind.

13

13

**Multi-Level Strategies:**

The studentÕs entries can vary. They could write pages of thoughts, or just a couple

sentences or a sentence, or just a few words. Some of the younger children could even

just draw the moon as they see it. They could also draw themselves looking at the moon.

**READING/WRITING LITERATURE ABOUT THE MOON:**

Take a trip to the school library. Speak with the librarian ahead of time and have books

out at different levels about the Moon. Read a book to the class and then let the students

look at as many of the books as they would like. Give them some time to read them or

start to read them. Have the students each check out their favorite book at the end of the

library session.

Have them write a short story of their own about the moon in their Space Journals. It can

be completely fictional and humorous, but it should contain at least one fact about the

moon.

**Multi-Level Strategies:**

The older and/or more advanced students can choose books that are at a higher level to

read, while the younger; less advanced students can choose picture books that would

interest them.

In the writing activity the advanced students may want to write a complex science fiction

story, and the younger or less advanced students may want to write a picture book story

with or without words.

**ACTIVITY: PLANETARIUM FIELD TRIP**

Take students to a Planetarium. Have them in buddy groups of two or three students

consisting of at least one older and one younger.

After the planetarium visit, have the students reflect about the experience in their Space

Journals.

14

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**RESOURCES**

To complete this project I looked through several curriculum guides as well as a

fourth grade teacherÕs science book, since this is the grade they usually learn about the

Solar System. I adapted some of the activities in the book, and created some of my own

to make this an exciting and multi-level thematic series of lesson plans.

In the series of lesson plans I state the overall theme and some essential questions

I would like the students to be able to answer after everything has been completed. I also

have a chart showing the theme broken down into three different parts and the level of

understanding I expect the students at each of their levels to understand.

I also include a chart which gives a summary of all of the activities, multi-level

strategies and how different areas of learning are being used. After that chart I go on to

explain the activities in detail, along with the multi-level strategies.

Materials Used:

**Harcourt Science ÐTeacherÕs Edition (Earth Science Units C and D)**, Harcourt

School Publishers, 2000

**Southfield Public Schools Mathematics and Science Curriculum Guide**, June 2000

**Masters in the Art of Teaching ÐGraduate Portfolio for Marygrove College,**

Gonzales, Alda M., July 1997

**The KidsÕ Science Book Creative Experiences for Hands-On Fun**, Robert Hirschfeld

& Nancy White, Trezzo Braren, Williamson Publishing, 1995

**Inclusive Teaching ÐCreating Effective Schools for all Learners,** Michael Peterson &

Mishael Hittie, Allyn & Bacon, Projected Publishing Date 2002

The Sun and the Moon Lesson Plan

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Ranked #1,083 in [Education](http://www.squidoo.com/topics/education), #25,370 overall

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[K12 Elementary Education](http://www.googleadservices.com/pagead/aclk?sa=L&ai=BWmaYho48T93iIJCAngSu-Y2EA5Kts60D8v3zvzfAjbcB8NccEAEYASCzosUDKAM4AFDdvsGlBGDJ9peN6KSMGKAB_rq22AOyAQ93d3cuc3F1aWRvby5jb23IAQHaAVVodHRwOi8vd3d3LnNxdWlkb28uY29tL3RoZS1zdW4tYW5kLXRoZS1tb29uLWxlc3Nvbi1wbGFuLWluLWhvbWVzY2hvb2wtYXN0cm9ub215LXVuaXQtyALy0MscqAMB6AOzA-gDvAPoA0r1AwAAAMD1AwAAQBCIBgE&num=1&cid=5GiOqUgERJPxB9I32mtCHBzR&sig=AOD64_18CM7D2K7UERBxOvNjYhLUHjNb-w&client=ca-pub-9879162776784828&adurl=http://pixel.everesttech.net/2165/cq%3Fev_sid%3D3%26ev_ln%3Delementary%2520school%2520help%26ev_crx%3D14808532410%26ev_mt%3D%26ev_n%3Dd%26ev_ltx%3D%26ev_pl%3Dwww.squidoo.com%26ev_pos%3Dnone%26url%3Dhttp%253A//zsem.k12.com/npages/1_paperclip_dyn.html%253Fst%253DUT%2526se%253DGoogle%2526campaign%253DUtah_Local_Awareness-Content%2526adgroup%253DSL_Elementary%2526kw%253Delementary_school_help) Champion Your Child's Academic Future w/ a Tuition-Free Education [www.K12.com/Utah](http://www.googleadservices.com/pagead/aclk?sa=L&ai=BWmaYho48T93iIJCAngSu-Y2EA5Kts60D8v3zvzfAjbcB8NccEAEYASCzosUDKAM4AFDdvsGlBGDJ9peN6KSMGKAB_rq22AOyAQ93d3cuc3F1aWRvby5jb23IAQHaAVVodHRwOi8vd3d3LnNxdWlkb28uY29tL3RoZS1zdW4tYW5kLXRoZS1tb29uLWxlc3Nvbi1wbGFuLWluLWhvbWVzY2hvb2wtYXN0cm9ub215LXVuaXQtyALy0MscqAMB6AOzA-gDvAPoA0r1AwAAAMD1AwAAQBCIBgE&num=1&cid=5GiOqUgERJPxB9I32mtCHBzR&sig=AOD64_18CM7D2K7UERBxOvNjYhLUHjNb-w&client=ca-pub-9879162776784828&adurl=http://pixel.everesttech.net/2165/cq%3Fev_sid%3D3%26ev_ln%3Delementary%2520school%2520help%26ev_crx%3D14808532410%26ev_mt%3D%26ev_n%3Dd%26ev_ltx%3D%26ev_pl%3Dwww.squidoo.com%26ev_pos%3Dnone%26url%3Dhttp%253A//zsem.k12.com/npages/1_paperclip_dyn.html%253Fst%253DUT%2526se%253DGoogle%2526campaign%253DUtah_Local_Awareness-Content%2526adgroup%253DSL_Elementary%2526kw%253Delementary_school_help)

[Home School High School](http://www.googleadservices.com/pagead/aclk?sa=L&ai=BuBxvho48T93iIJCAngSu-Y2EA6200cICtfH3qy3AjbcBkIRsEAIYAiCzosUDKAM4AFC-meuk-v____8BYMn2l43opIwYoAGrkKnZA7IBD3d3dy5zcXVpZG9vLmNvbcgBAdoBVWh0dHA6Ly93d3cuc3F1aWRvby5jb20vdGhlLXN1bi1hbmQtdGhlLW1vb24tbGVzc29uLXBsYW4taW4taG9tZXNjaG9vbC1hc3Ryb25vbXktdW5pdC2AAgGoAwHoA7MD6AO8A-gDSvUDAAAAwPUDAABAEIgGAQ&num=2&cid=5GiOqUgERJPxB9I32mtCHBzR&sig=AOD64_2wgXaHoMLz5hzE8WOwTNvlINgqDA&client=ca-pub-9879162776784828&adurl=http://www.luonlineacademy.com/%3F%26acode%3DD80536) Learn More About Our Home School! Accredited, Online and Christian. [www.LUOnlineAcademy.com](http://www.googleadservices.com/pagead/aclk?sa=L&ai=BuBxvho48T93iIJCAngSu-Y2EA6200cICtfH3qy3AjbcBkIRsEAIYAiCzosUDKAM4AFC-meuk-v____8BYMn2l43opIwYoAGrkKnZA7IBD3d3dy5zcXVpZG9vLmNvbcgBAdoBVWh0dHA6Ly93d3cuc3F1aWRvby5jb20vdGhlLXN1bi1hbmQtdGhlLW1vb24tbGVzc29uLXBsYW4taW4taG9tZXNjaG9vbC1hc3Ryb25vbXktdW5pdC2AAgGoAwHoA7MD6AO8A-gDSvUDAAAAwPUDAABAEIgGAQ&num=2&cid=5GiOqUgERJPxB9I32mtCHBzR&sig=AOD64_2wgXaHoMLz5hzE8WOwTNvlINgqDA&client=ca-pub-9879162776784828&adurl=http://www.luonlineacademy.com/%3F%26acode%3DD80536)

[Free Teacher Resources](http://www.googleadservices.com/pagead/aclk?sa=L&ai=BD2c9ho48T93iIJCAngSu-Y2EA6P4xuUDy5j89TDAjbcBoNEZEAMYAyCzosUDKAM4AFDRyNfX-P____8BYMn2l43opIwYoAHVkLTJA7IBD3d3dy5zcXVpZG9vLmNvbcgBAdoBVWh0dHA6Ly93d3cuc3F1aWRvby5jb20vdGhlLXN1bi1hbmQtdGhlLW1vb24tbGVzc29uLXBsYW4taW4taG9tZXNjaG9vbC1hc3Ryb25vbXktdW5pdC2AAgGoAwHoA7MD6AO8A-gDSvUDAAAAwPUDAABAEIgGAQ&num=3&cid=5GiOqUgERJPxB9I32mtCHBzR&sig=AOD64_0R_ZEa-cQE_L_JrUilacP8N6VLiQ&client=ca-pub-9879162776784828&adurl=http://www.teachingchannel.org/videos%3Flanding_page%3DEnglish%2BLanguage%2BArts%2BLanding%2BPage) Get lesson plans, worksheets & Collaborate with English teachers [TeachingChannel.org](http://www.googleadservices.com/pagead/aclk?sa=L&ai=BD2c9ho48T93iIJCAngSu-Y2EA6P4xuUDy5j89TDAjbcBoNEZEAMYAyCzosUDKAM4AFDRyNfX-P____8BYMn2l43opIwYoAHVkLTJA7IBD3d3dy5zcXVpZG9vLmNvbcgBAdoBVWh0dHA6Ly93d3cuc3F1aWRvby5jb20vdGhlLXN1bi1hbmQtdGhlLW1vb24tbGVzc29uLXBsYW4taW4taG9tZXNjaG9vbC1hc3Ryb25vbXktdW5pdC2AAgGoAwHoA7MD6AO8A-gDSvUDAAAAwPUDAABAEIgGAQ&num=3&cid=5GiOqUgERJPxB9I32mtCHBzR&sig=AOD64_0R_ZEa-cQE_L_JrUilacP8N6VLiQ&client=ca-pub-9879162776784828&adurl=http://www.teachingchannel.org/videos%3Flanding_page%3DEnglish%2BLanguage%2BArts%2BLanding%2BPage)

Astronomy Unit: The Sun & The Moon Lesson Plan (Week 2 of 4)



This is week 2 of a 4 week hands-on unit study on Astronomy. Form the lunar phases using Oreo cookies, drop balls in flour to make a crater-filled lunar surface, recreate Galileo's famous gravity experiment, and more!  
  
My lessons are geared toward 3rd-4th grade level children and their siblings. These are lessons I created to do with a weekly co-op. We meet each week for 2 ½ hours and have 10 children between the ages of 1-13. Even if you're not meeting with a co-op, you can still use these fun lessons with your family or classroom!  
  
If you'd like more information on how you can start your own homeschool co-op or if you're curious how I operate my co-op, check out my lens: [How to Start a Homeschool Co-op](http://www.squidoo.com/how-to-start-a-homeschool-co-op).

Contents at a Glance

[Introduction & The Round Earth](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147094451)

[Copernicus & the Revolving Earth](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147097991)

[Day & Night](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098001)

[Gravity](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098011)

[Galileo's Gravity Experiment](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098021)

[Galileo & the Telescope](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098031)

[Favorite Galileo Books](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098131)

[The Moon's Surface](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098041)

[Moon Rocks](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098051)

[More](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-)

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[Moon Rocks](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098051)

[Moon Reflecting the Sun's Light](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098061)

[Oreo Lunar Phases](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098071)

[Eclipses & Review](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module147098081)

[My Astronomy Lessons](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-#module150426881)

[Less](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-)

Introduction & The Round Earth

[](http://www.squidoo.com/type=text)\*\*\*Please bring a flashlight and a cake pan for each of your children.\*\*\*   
  
1. Stretch & pray.  
  
2. Read and discuss Genesis 1: 14-19.  
  
3. Ask the children, "When you look out the window, does the world look flat? Why? Does it look like to sun moves around us or we move around the sun? How do you know those aren't the case?" It wasn't always the case that we knew the world was round & the Earth revolved around the sun.  
  
4. Briefly introduce the history of astronomy by reading the first page of Boy, Were We Wrong About the Solar System by Kathleen V. Kudlinski.  
  
5. Discuss how we learned the earth is round. Mention a bit about Erastothenes. Hold a toy against a ball or globe. Slowly rotate the globe/ball asking the children if they can see the toy yet and if they can see all of it yet. It will gradually come into view just like ships would appear coming over the horizon. You can also [get additional ideas of what to say here](http://fuse.pha.jhu.edu/~wpb/globe.html%20) .  
MOM 1: YOU WILL NEED: a ball/globe, a small toy, and a broom or straight stick

[Boy, Were We Wrong About the Solar System](http://www.amazon.com/Were-Wrong-About-Solar-System/dp/0525469796%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0525469796)

[Boy, Were We Wrong About the Solar System](http://www.amazon.com/Were-Wrong-About-Solar-System/dp/0525469796%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0525469796)

by: Kathleen V. Kudlinski

This has great illustrations and succinct information. It is inaccurate in a few places, so make sure to brush up on your astronomy knowledge before reading it.

Amazon Price: $4.50 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Were-Wrong-About-Solar-System/dp/0525469796%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0525469796)

[Nicolaus Copernicus: The Earth Is a Planet](http://www.amazon.com/Nicolaus-Copernicus-Dennis-B-Fradin/dp/1593360061%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1593360061)

[Nicolaus Copernicus: The Earth Is a Planet](http://www.amazon.com/Nicolaus-Copernicus-Dennis-B-Fradin/dp/1593360061%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1593360061)

by: Dennis B. Fradin

A wonderful bio on an important, but lesser-known man.

Amazon Price: $30.05 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Nicolaus-Copernicus-Dennis-B-Fradin/dp/1593360061%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1593360061)

Copernicus & the Revolving Earth

[](http://www.squidoo.com/type=text)6. Read the next few first pages of Boy, Were We Wrong About the Solar System by Kathleen V. Kudlinski. Until after it mentions Galileo's [work](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-).  
  
7. Read some of Nicolaus Copernicus: The Earth Is a Planet by Dennis B. Fradin.  
  
8. Act out revolving. Place a lamp (turned on) in the middle of the room. Have everyone stand in a circle around the lamp. Have them walk counterclockwise around the lamp and ask how long it takes the earth to revolve around the sun.  
MOM 2: YOU WILL NEED: a lamp

Day & Night

[](http://www.squidoo.com/type=text)9. Read What Makes Day and Night by Franklyn M. Branley.  
  
10. Act out rotating. Place a lamp (turned on) in the middle of the room. Have everyone stand in a circle around the lamp. Mention that the Earth is tilted pointing toward Polaris, so have them tilt their heads toward a picture of a star on the wall. Have them rotate on their axis by turning around so their back is to the lamp/sun. Have them say, "Night." Turn counterclockwise with your side to the lamp and say, "Sunrise." Turn counterclockwise facing the sun and say, "Noon." Turn counterclockwise with your side to the lamp and say, "Sunset." Go through everything again. Now have everyone rotate and revolve around the lamp/sun. You can also get additional ideas of what to say from [this lesson plan](http://fuse.pha.jhu.edu/~wpb/globe.html) and [this lesson plan](http://sdo.gsfc.nasa.gov/assets/docs/Kenestetic_Astronomy.pdf).  
MOM 2: YOU WILL NEED: a lamp  
  
11. Show a picture of the Earth taken from space that shows half the Earth in blackness. Ask, "What happened to the rest of the Earth?" Point at different places on the picture and ask what time it is in the picture (i.e. the blackness is night, the point on the Earth between the blackness and the light is sunrise, etc.)

[What Makes Day and Night (Let's-Read-and-Find-Out Science 2)](http://www.amazon.com/Makes-Night-Lets-Read-Find-Out-Science/dp/0064450503%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0064450503)

[What Makes Day and Night (Let's-Read-and-Find-Out Science 2)](http://www.amazon.com/Makes-Night-Lets-Read-Find-Out-Science/dp/0064450503%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0064450503)

by: Franklyn M. Branley

We read a bunch of books on this topic, and this was our favorite one.

Amazon Price: $2.83 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Makes-Night-Lets-Read-Find-Out-Science/dp/0064450503%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0064450503)

[Gravity Is a Mystery (Let's-Read-and-Find-Out Science 2)](http://www.amazon.com/Gravity-Mystery-Lets-Read-Find-Out-Science/dp/0064452018%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0064452018)

[Gravity Is a Mystery (Let's-Read-and-Find-Out Science 2)](http://www.amazon.com/Gravity-Mystery-Lets-Read-Find-Out-Science/dp/0064452018%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0064452018)

by: Franklyn M. Branley

This is simple enough of an explanation of a not-so-easy topic, and it has fun illustrations.

Amazon Price: $2.78 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Gravity-Mystery-Lets-Read-Find-Out-Science/dp/0064452018%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0064452018)

Gravity

[](http://www.squidoo.com/type=text)12. Ask the children what keeps the Earth revolving around the sun (Gravity). Demonstrate: Have all but 1 child sit at one side of the room. Have 1 child stand next to you. Hold hands. Tell the child to go and sit with the other children while still holding your hand. Meanwhile, you should spin around in a circle a few times and hold on tightly to his/her hand. Ask: What direction was s/he trying to go? What direction did the s/he go? Why couldn't s/he go straight? What did I represent? (sun) What did s/he represent? (Earth) What did our arms represent? (gravity)  
  
13. Read through some of Gravity Is a Mystery by Franklyn M. Branley.

Galileo's Gravity Experiment

[](http://www.squidoo.com/type=text)14. Ask the children what they think of when they think of science. Hopefully someone will say, "Experiments." Tell them that wasn't always the case. Briefly mention Aristotle and how scientists accepted whatever he taught as true. Briefly mention how Galileo challenged that way of thinking.  
  
15. Do Galileo/Pisa experiment to demonstrate effects of gravity. Tell them that Aristotle said that items that weigh more will drop faster. Give each child a baseball, tennis ball or orange and a penny. Have them stand on a chair or someplace higher if possible. Ask, "Which item do you think will land first?" Have them hold out both hands and drop the items at the same time. They should land at the same time. (The higher up from which they drop them, the better this will be demonstrated.) Switch out the penny for a piece of paper. Now ask, "Which item do you think will land first?" Have them drop them at the same time. The ball should land first. Now have them crumple up the paper tightly. Ask, "Which item do you think will land first?" Have them drop them at the same time. They should land at the same time. Ask, "What happened?" Explain that they changed the surface area of the paper. The paper floated lightly through the air at first but after you change the surface area, it can't get caught up in the wind anymore. If our planet was like [Mercury](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-) or the moon and didn't have an atmosphere, even the un-crumpled paper would fall at the same speed." Show pictures of Galileo's experiment from Galileo's Leaning Tower Experiment by Wendy Macdonald.  
MOM 3: YOU WILL NEED: 9 baseballs, tennis balls or oranges, 9 pennies, & 9 pieces of paper

[Galileo's Leaning Tower Experiment (Junior Library Guild Selection (Charlesbridge Hardcover))](http://www.amazon.com/Galileos-Experiment-Selection-Charlesbridge-Hardcover/dp/1570918694%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1570918694)

[Galileo's Leaning Tower Experiment (Junior Library Guild Selection (Charlesbridge Hardcover))](http://www.amazon.com/Galileos-Experiment-Selection-Charlesbridge-Hardcover/dp/1570918694%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1570918694)

by: Wendy Macdonald

Amazon Price: $10.17 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Galileos-Experiment-Selection-Charlesbridge-Hardcover/dp/1570918694%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1570918694)

[Galileo's Journal, 1609-1610](http://www.amazon.com/Galileos-Journal-1609-1610-Jeanne-Pettenati/dp/1570918805%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1570918805)

[Galileo's Journal, 1609-1610](http://www.amazon.com/Galileos-Journal-1609-1610-Jeanne-Pettenati/dp/1570918805%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1570918805)

by: Jeanne Pettenati

Amazon Price: $3.77 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Galileos-Journal-1609-1610-Jeanne-Pettenati/dp/1570918805%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1570918805)

[Celestron 21024 FirstScope Telescope](http://www.amazon.com/Celestron-21024-FirstScope-Telescope/dp/B001UQ6E4Y%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB001UQ6E4Y)

[Celestron 21024 FirstScope Telescope](http://www.amazon.com/Celestron-21024-FirstScope-Telescope/dp/B001UQ6E4Y%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB001UQ6E4Y)

Amazon Price: $30.76 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Celestron-21024-FirstScope-Telescope/dp/B001UQ6E4Y%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB001UQ6E4Y)

[Celestron 21061 AstroMaster 70 AZ Refractor Telescope](http://www.amazon.com/Celestron-21061-AstroMaster-Refractor-Telescope/dp/B000MLHMAS%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000MLHMAS)

[Celestron 21061 AstroMaster 70 AZ Refractor Telescope](http://www.amazon.com/Celestron-21061-AstroMaster-Refractor-Telescope/dp/B000MLHMAS%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000MLHMAS)

Amazon Price: $106.37 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Celestron-21061-AstroMaster-Refractor-Telescope/dp/B000MLHMAS%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000MLHMAS)

[](http://www.amazon.com/Celestron-93970-SkyScout-Personal-Planetarium/dp/B000CNPAAA%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000CNPAAA)

[Celestron SkyScout Personal Planetarium](http://www.amazon.com/Celestron-93970-SkyScout-Personal-Planetarium/dp/B000CNPAAA%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000CNPAAA)

Amazon Price: $191.36 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Celestron-93970-SkyScout-Personal-Planetarium/dp/B000CNPAAA%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000CNPAAA)

[Celestron 127EQ PowerSeeker Telescope](http://www.amazon.com/Celestron-21049-127EQ-PowerSeeker-Telescope/dp/B0007UQNKY%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB0007UQNKY)

[Celestron 127EQ PowerSeeker Telescope](http://www.amazon.com/Celestron-21049-127EQ-PowerSeeker-Telescope/dp/B0007UQNKY%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB0007UQNKY)

Amazon Price: $155.00 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Celestron-21049-127EQ-PowerSeeker-Telescope/dp/B0007UQNKY%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB0007UQNKY)

Galileo & the Telescope

[](http://www.squidoo.com/type=text)16. Galileo was well known for encouraging scientists to test the theories of Aristotle using experiments like the one we just did. He was also well known for his developments on the telescope with which he used to study the moon.  
  
17. Read most of Galileo's Journal, 1609-1610 by Jeanne Pettenati (leaving out the dates and locations in the journal entries).  
  
18. (OPTIONAL) Pass around a telescope and let children look out the window using it.  
MOM 4: YOU WILL NEED: a telescope or binoculars

[auction image](http://rover.ebay.com/rover/1/711-53200-19255-0/1?campid=5336747419&toolid=10001&customid=the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-&mpre=http%3A%2F%2Fcgi.ebay.com%2Fws%2FeBayISAPI.dll%3FViewItem%26item%3D300661919858%26ih%3D020%26category%3D74927%26ssPageName%3DWDVW%26rd%3D1)

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Time Remaining: 3 minutes

[](http://rover.ebay.com/rover/1/711-53200-19255-0/1?campid=5336747419&toolid=10001&customid=the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-&mpre=http%3A%2F%2Fcgi.ebay.com%2Fws%2FeBayISAPI.dll%3FViewItem%26item%3D260757369719%26ih%3D016%26category%3D74927%26ssPageName%3DWDVW%26rd%3D1)

[Black MONOCULAR Pocket Mini 15x32 telescope J06](http://rover.ebay.com/rover/1/711-53200-19255-0/1?campid=5336747419&toolid=10001&customid=the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-&mpre=http%3A%2F%2Fcgi.ebay.com%2Fws%2FeBayISAPI.dll%3FViewItem%26item%3D260757369719%26ih%3D016%26category%3D74927%26ssPageName%3DWDVW%26rd%3D1)

Current Bid: $2.99[Bid Now](http://rover.ebay.com/rover/1/711-53200-19255-0/1?campid=5336747419&toolid=10001&customid=the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-&mpre=http%3A%2F%2Fcgi.ebay.com%2Fws%2FeBayISAPI.dll%3FViewItem%26item%3D260757369719%26ih%3D016%26category%3D74927%26ssPageName%3DWDVW%26rd%3D1)

Time Remaining: 2 hours, 42 minutes

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[Silver MONOCULAR Pocket Mini 15x32 telescope J07](http://rover.ebay.com/rover/1/711-53200-19255-0/1?campid=5336747419&toolid=10001&customid=the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-&mpre=http%3A%2F%2Fcgi.ebay.com%2Fws%2FeBayISAPI.dll%3FViewItem%26item%3D260757369730%26ih%3D016%26category%3D74927%26ssPageName%3DWDVW%26rd%3D1)

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Time Remaining: 2 hours, 42 minutes

[eBay](http://www.ebay.com/api/index.html)

Favorite Galileo Books

These were our favorite Galileo books. Which one is your favorite? Did I miss any? Let me know!

1

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[Galileo's Treasure Box by Catherine Brighton](http://www.amazon.com/Galileos-Treasure-Box-Catherine-Brighton/dp/0802787681%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0802787681)

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While Galileo sleeps, his young daughter Virginia, [more...](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-)1 point

While Galileo sleeps, his young daughter Virginia, later known as Maria Celeste, explores his study and discovers some of the tools he uses in his scientific experiments.1 point

3

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[Galileo: Scientist and Stargazer (What's Their Story) by Jacqueline Mitton](http://www.amazon.com/Galileo-Scientist-Stargazer-Whats-Their/dp/0195214056%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0195214056)

[Galileo: Scientist and Stargazer (What's Their Story) by Jacqueline Mitton](http://www.amazon.com/Galileo-Scientist-Stargazer-Whats-Their/dp/0195214056%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0195214056)

Galileo's revolutionary scientific work brought hi [more...](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-)0 points

Galileo's revolutionary scientific work brought him into conflict with the authorities but earned him an honored place in history books. He swept away old notions of the universe by observing the skies through a telescope and confirming that the Earth and planets travel around the Sun.0 points

4

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[Along Came Galileo by Jeanne Bendick](http://www.amazon.com/Along-Came-Galileo-Jeanne-Bendick/dp/1893103013%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1893103013)

[Along Came Galileo by Jeanne Bendick](http://www.amazon.com/Along-Came-Galileo-Jeanne-Bendick/dp/1893103013%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D1893103013)

One of the most important figures to come out of t [more...](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-)0 points

One of the most important figures to come out of the awakening world of the Renaissance was Galileo Galelei. Often referred to as the "Archimedes of his time" Galileo was forever asking questions. Is it possible to measure heat? Is it possible to weigh air? Does the earth stand still or does it move? How fast do objects fall to the earth? His questions led to some of the most important answers of the scientific world and to his contributions to astronomy, physics, and mathematics. Galileo also a...0 points

5

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[Starry Messenger: Galileo Galilei by Peter S�s](http://www.amazon.com/Starry-Messenger-Galileo-Peter-S%C3%ADs/dp/0374470278%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0374470278)

[Starry Messenger: Galileo Galilei by Peter Sís](http://www.amazon.com/Starry-Messenger-Galileo-Peter-S%C3%ADs/dp/0374470278%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0374470278)

In every age there are courageous people who break [more...](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-)0 points

In every age there are courageous people who break with tradition to explore new ideas and challenge accepted truths. Galileo Galilei was just such a man--a genius--and the first to turn the telescope to the skies to map the heavens. In doing so, he offered objective evidence that the earth was not the fixed center of the universe but that it and all the other planets revolved around the sun. Galileo kept careful notes and made beautiful drawings of all that he observed. Through his telescope he...0 points

6

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When the great scientist and professor Galileo meets a bright farm boy, Massimo, the teacher becomes the student. On an ordinary day, Galileo encounters Massimo dropping food from a bridge to his uncle passing below in his boat. This simple action makes Galileo rethink Aristotles teachings. Galileo takes an interest in Massimos cleverness, and together, in a series of experiments, the two investigate the science of motion. Kids will love this lively reimagining of Galileos Leaning Tower experime...0 points

8

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Chronicles the life of a brilliant Italian mathematician, physicist, and astronomer, who was forced to renounce his inventions and discoveries because they challenged the authority of the Church.0 points

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The Moon's Surface

[](http://www.squidoo.com/type=text)19. Read Moon by Steve Tomecek. (Skip page 15.)  
  
20. Create the moon's surface. Cover an area with newspapers as this will get flour everywhere. Give each child a cake pan with about 2 cups of flour (surface of the moon) in it and 3 small balls of different sizes (meteorites). Ask them what each item represents. Let them drop the balls in the flour and create craters. Ask them if this is what the Earth looks like and why. The moon has no atmosphere. God protected our planet with an atmosphere to burn up meteorites as they blast onto our planet.  
MOM 1: YOU WILL NEED: flour, 27 balls of various sizes

[Moon (Jump Into Science)](http://www.amazon.com/Moon-Jump-Science-Steve-Tomecek/dp/0792251237%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0792251237)

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by: Steve Tomecek

We read lots of books on the moon, and this was our favorite.

Amazon Price: $10.39 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Moon-Jump-Science-Steve-Tomecek/dp/0792251237%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0792251237)

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by: Bob Crelin

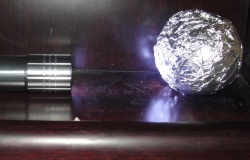
We loved the cut-outs in this book!

Amazon Price: $6.65 (as of 02/15/2012) [Buy Now](http://www.amazon.com/Faces-Moon-Bob-Crelin/dp/157091785X%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D157091785X)

Moon Rocks

[](http://www.squidoo.com/type=text)21. (OPTIONAL) Show a photograph of the moon's surface and a picture of a moon rock. Pass around a piece of basalt and explain how this igneous rock is very similar to what moon rocks look like.  
  
MOM 2: YOU WILL NEED: 1 piece of basalt

Moon Reflecting the Sun's Light

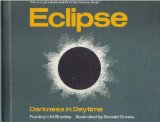
[](http://www.squidoo.com/type=text)22. Show how the moon reflects the light of sun & how phases are made. Give each child a ball (I used tennis balls.) and a piece of aluminum foil. Have them wrap the ball with the foil. This is your moon. Have them each grab their flashlight. Everyone gets to cram into 1 or 2 [bathrooms](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-) (the only dark rooms in my house). Turn off the lights. Can they see their moon? (No.) Now have them each turn on their flashlights (the sun). Can they see their moon now? (Yes.) What did this show them? (The moon shines because it reflects the light of the moon.) Have all but 1 child turn off their flashlight. Use a ball (the Earth) & have it slowly move between the light from the flashlight & the moon. Watch how on parts of the moon are illuminated. This is what causes lunar phases. Yes, the complete moon is always there, but you can only see parts of it because the Earth gets between some of the rays of sunshine and the moon. You can get additional ideas of what to say by looking at [this lesson plan](http://www.lpi.usra.edu/education/other_programs/lunar_eclipse/fruit_loops.shtml)  
or [this lesson plan](http://www.uen.org/Lessonplan/preview.cgi?LPid=2359).  
  
MOM 3: YOU WILL NEED: 10 balls (like 9 tennis balls & 1 soccer ball) & aluminum foil

Oreo Lunar Phases

[](http://www.squidoo.com/type=text)23. Show the various lunar phases by showing the cut outs in Faces of the Moon by Bob Crelin.  
  
24. Create [the moon's phases using Oreo cookies](http://analyzer.depaul.edu/paperplate/Oreo%20Moon%20Phases.htm) and then eat cookies & drink water. Review what we've learned so far as they eat the cookies.  
MOM 4: YOU WILL NEED: 2 packages Oreo-type cookies, 5 copies of the moon phases Oreo sheet from [The Moon's Phases Using Oreo Cookies](http://analyzer.depaul.edu/paperplate/Oreo%20Moon%20Phases.htm) , 10 plastic knives or spoons, 10 napkins, 10 cups for water

Eclipses & Review

[](http://www.squidoo.com/type=text)25. Read Eclipse: Darkness in Daytime by Franklyn Mansfield Branley. Half way through the book have the children look out the window at a [tree](http://www.squidoo.com/the-sun-and-the-moon-lesson-plan-in-homeschool-astronomy-unit-). Close one eye. Hold up one finger and position it so that you can't see the tree. Ask, "Did the tree disappear? Why did it appear to no longer be there?" Your finger (smaller than the tree) was able to block out the tree because it's closer to you. The moon is closer to us so it is able to block out the enormous sun during an eclipse.  
  
26. Show a picture of a lunar eclipse and discuss the one we saw in December 2010. (It turns red because the sun's light passes through the atmosphere of the Earth...kind of like at sunrise and sunset.)  
  
27. Review Planets Go Spinning song from last week's [Solar System lesson](http://www.squidoo.com/solar-system-lesson-plan-for-homeschool-in-astronomy-unit).  
  
28. Sing Day, Night, & Year song.  
(Tune: " The Farmer in the Dell")  
The Earth rotates around, (Spin around in place)  
The Earth rotates around,  
Once a day, in 24 hours, (Tap wrist like you're tapping a watch)  
The Earth rotates around.  
  
The moon rotates 'round the Earth, (Hold up 1 finger & spin around in place)  
The moon rotates 'round the Earth,  
Once a month, 29 days, (Tap wrist like you're tapping a watch)  
The moon rotates 'round the Earth.  
  
The Earth revolves 'round the sun, (Hold out one finger & wave around in a large circle)  
The Earth revolves 'round the sun,  
Once a year, 365 days, (Tap wrist like you're tapping a watch)  
The Earth revolves 'round the sun.

[](http://www.amazon.com/Eclipse-Darkness-Franklyn-Mansfield-Branley/dp/0690046170%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0690046170)

[Eclipse: Darkness in Daytime](http://www.amazon.com/Eclipse-Darkness-Franklyn-Mansfield-Branley/dp/0690046170%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0690046170)

by: Franklyn Mansfield Branley

Amazon Price: $116.96 (as of 02/15/2012)[Buy Now](http://www.amazon.com/Eclipse-Darkness-Franklyn-Mansfield-Branley/dp/0690046170%3FSubscriptionId%3D19BAZMZQFZJ6G2QYGCG2%26tag%3Dsquid1251741-20%26linkCode%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3D0690046170)

This is the best book on eclipses that I could find. It has illustrations (very appealing to my children) rather than photographs and it has just the right amount of information for this age group.